

What is claimed is:

- 1 An adapter apparatus, comprising:
  - a first interface connected to a digital multiple signal
  - 5 line;
  - a second interface connected to a network;
  - a signal class detector for detecting a signal class of
  - an input signal input via said first interface;
  - packet preparation means for preparing a packet that
  - 10 has been obtained by implementing a first protocol
  - conversion for said input signal that includes
  - identification information of said corresponding signal
  - class and that was input via said first interface based
  - on said signal class detected by said signal class
  - 15 detector to send this packet to said network via said
  - second interface; and
  - process means for identifying a signal class from said
  - packet input from said network via said second interface
  - to implement a second protocol conversion for data of
  - 20 said corresponding input packet responding to said
  - identified signal class, to prepare a digital signal,
  - and to output this digital signal to said first
  - interface.
- 25 2 The adapter apparatus according to claim 1, wherein

said packet preparation means comprise:

a header preparation section for preparing a header indicating identification information of said corresponding signal class based on said signal class

5 detected by said signal class detector;

a data preparation section for preparing data that has been obtained by implementing said protocol conversion for said input signal input via said first interface based on said signal class detected by said signal class  
10 detector; and

a packet preparation section for collecting said data from said header preparation section and said data from said data preparation section to prepare one packet and to output it to said second interface.

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3 The adapter apparatus according to claim 1, wherein said process means comprise:

a header extraction section for extracting a header from said packet input from said network via said second  
20 interface;

a data extraction section for extracting data from said input packet; and

a signal classification data process section for identifying a signal class from said header extracted  
25 from said header extraction section to implement said

second protocol conversion for said data from said data extraction section responding to this identified signal class and to output it to said first interface.

- 5    4    The adapter apparatus according to claim 1, wherein  
said network is a local area network, to said first  
interface is connected anyone of a multi function  
telephone or a private branch exchange via said digital  
signal line, and
- 10        said signal class detector detects that said signal  
class is anyone of a control signal, a tone signal, and  
a voice signal.
- 5    The adapter apparatus according to claim 1, wherein a  
15    plurality of said first interfaces are provided,  
to each of said plurality of said first interfaces are  
connected digital multiple signal lines separately,  
said packet preparation means includes means for  
preparing a packet that includes in a header information  
20    that to which interface out of said plurality of said  
first interfaces said packet is sent, and  
said process means includes means for identifying a  
signal class from said packet input from said network  
via said second interface to implement a second protocol  
25    conversion for data of said corresponding input packet

responding to said identified signal class, to prepare a digital signal, and to simultaneously output said digital signal to a designated first interface out of said plurality of said interfaces based on information  
5 obtained from said input packet.

6 A network system, wherein a first adapter implementing a protocol conversion is connected between a local area network and a digital telephone, and a second adapter  
10 implementing a protocol conversion is connected between said local area network and a private branch exchange,  
each of said first adapter and said second adapter comprising:  
a first interface being connected to said digital  
15 telephone or said private branch exchange via a digital multiple signal line;  
a second interface connected to said local area network;  
a signal class detector for detecting a signal class of  
20 an input signal input via said first interface;  
packet preparation means for preparing a packet that has been obtained by implementing a first protocol conversion for said input signal that includes identification information of said corresponding signal  
25 class and that was input via said first interface based

on said signal class detected by said signal class detector to send this packet to said local area network via said second interface; and

process means for identifying a signal class from said  
5 packet input from said local area network via said second interface to implement a second protocol conversion for data of said corresponding input packet responding to said identified signal class, to prepare a digital signal, and to output this digital signal to  
10 said first interface.

7 The network system according to claim 6, wherein a plurality of said first interfaces are provided to each of said first and said second adapters,

15 to each of said plurality of said first interfaces are connected digital multiple signal lines separately,

said packet preparation means includes means for preparing a packet that includes in a header information that to which interface out of said plurality of said  
20 first interfaces said packet is sent, and

said process means includes means for identifying a signal class from said packet input from said local area network via said second interface to implement a second protocol conversion for data of said corresponding input  
25 packet responding to said identified signal class, to

prepare a digital signal, and to simultaneously output said digital signal to a designated first interface out of said plurality of said first interfaces based on information obtained from said input packet.

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8 The network system according to claim 6, wherein said second adapter has been built within said private branch exchange.

10 9 The network system according to claim 6, wherein said digital telephone is a multi function telephone, and said private branch exchange is connected to a plurality of multi function telephones.

15 10 A signal conversion method in a network system including a first interface connected to a digital multiple signal line and a second multiple line connected to a network, comprising the steps of:

detecting a signal class of an input signal input via said first interface;

20 preparing a packet that has been obtained by implementing a first protocol conversion for said input signal that includes identification information of this signal class and that was input via said first interface  
25 based on said detected signal class;

sending said packet to said network via said second interface;

identifying a signal class from said packet input from said network via said second interface;

- 5     implementing a second protocol conversion for data of said input packet responding to said identified signal class to prepare a digital signal; and  
       outputting said digital signal to said first interface.

- 10   11 The signal conversion method in a network system according to claim 10, wherein said step of preparing said packet comprises the steps of:

- preparing a header indicating identification information of said corresponding signal class based on said detected  
15   signal class;

      preparing data that has been obtained by implementing said first protocol conversion for said input signal input via said first interface based on said detected signal class; and

- 20   collecting said prepared header and said prepared data to prepare one packet.

- 12 The signal conversion method in a network system according to claim 10, wherein said step for preparing  
25   said digital signal comprises the steps of:

extracting a header from said packer input from said network via said second interface;  
extracting data from said input packet; and  
identifying a signal class from said extracted packet to  
5 convert into said second protocol said extracted data  
responding to this identified signal class.